

Remarks

Claims 16 and 19-27 are pending. Claim 16 is amended. Support for the amendments can be found at, for example, Claims 16 and 17 of the originally filed application. Other amendments to the claims are merely made for the sake of clarity. Claims 16 and 19-27 are rejected.

At the outset, the Applicants wish to thank the Examiner for the interview of December 29, 2009 in which the rejections were discussed. The Applicants discussed potential amendments to Claim 16 during the interview. Those changes have been made as discussed.

Claims 16 and 19-27 are rejected under 35 USC §112, second paragraph, as indefinite. Amended Claim 16 now recites "starting evacuation of the resin after the resin reaches the evacuation lines and continuing evacuation[.]" Amended Claim 16 also now recites "providing resin injection lines and evacuation lines" and that "said reinforcing fiber substrate is heated up to a resin curing temperature." These amendments provide proper antecedent basis for the various claim elements and render the claims definite as discussed during the interview. The amendments are also consistent with the Examiner's helpful guidance during the interview. The Applicants respectfully request withdrawal of the rejections of Claims 16 and 19-27.

Claims 16 and 19-27 are rejected under 35 USC §103(a) as obvious over the combination of US '478 and JP '426. The Applicants respectfully submit that Claims 16 and 19-27 are not obvious for the reasons set forth below. Claims 16 and 19-27 now recite "forming a reinforcing fiber substrate as a preform having a first fiber volume content, which is a volume of reinforcing fibers in the bulk volume of the reinforcing fiber substrate, that is lower than a target fiber volume content of an FRP molded material to be molded; placing the reinforcing fiber substrate in a mold; providing resin injection lines and evacuation lines each communicating with an inside of said mold; [and] reducing pressure in said mold by evacuation[.]"

This means that the claimed methods aim to control the fiber volume content at the preform preparation state, which occurs before placing the preform in a mold, and the fiber volume content at the preform preparation state is intentionally controlled to be lower than the above-described target fiber volume content of an FRP to be molded so that the resin can be more easily and properly distributed in and impregnated into the preform. This prevents occurrence of non-impregnated portions and achieves uniform impregnation. This step is not disclosed, taught or suggested in US '478. This is in sharp contrast to the disclosure at paragraph [0020] of US '478 which is relied on in the rejection as both relating to a vacuum evacuation step or an evacuation step of excess resin after

placing the preform in a mold. Thus, the Applicants respectfully submit the rejection ignores the time flow and order of steps in the claimed molding methods.


It should also be emphasized that Claims 16 and 19-27 recite “forming a reinforcing fiber substrate as a preform having a first fiber volume content, which is a volume of reinforcing fibers in the bulk volume of the reinforcing fiber substrate, that is lower than a target fiber volume content of an FRP molded material to be molded [(emphasis added)].” This is significant because, although US ‘478 appears to describe forming a stacked material on a mold, there is no description, nor suggestion concerning the fiber volume content of a stacked material before vacuum evacuation. Thus, there appears to be no description in US ‘478 for the fiber volume content of a preform before placement in a mold.

US ‘478 also does not teach that “a first fiber volume content must be lower than 60%, which includes the claimed ranges of 45% to 60% and 45 to 55%” as stated in the rejection. This is because all US ‘478 appears to teach at paragraph [0007] is that after molding the “volume of the plurality of reinforcing fibers [in the molded composite structure body] comprises at least about sixty percent of a total volume of the composite structure body.” Thus, US ‘478 does not teach the first fiber volume of a reinforcing fiber substrate provided as a preform before molding is “in a range of 45 to 60%” or “in a range of 45 to 55%” as recited in dependent Claims 20 and 21.

JP ‘426 does nothing to correct these deficiencies of US ‘478. This means the combination of US ‘478 and JP ‘426 fails to teach all the elements of the claimed methods or motivate one of ordinary skill in the art to perform the claimed methods. Stated differently, the rejections fail to establish *prima facie* obviousness. The Applicants respectfully request withdrawal of the rejections of Claims 16 and 19-27.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,


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